

PATENT SPECIFICATION

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NO DRAWINGS

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(54) WAFER-FORM MOUTHWASH

- (71) We, FARAH MANUFACTURING COMPANY INC, of 8889 Gateway West, El Paso, Texas 79985, United States of America, a company incorporated under the laws of Texas, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—
- This invention relates to a mouthwash in the form of thin, solid wafers that are quickly and completely soluble in the mouth, and to a method of preparing such wafers.
- It is frequently desirable to refresh the mouth in circumstances which make it most inconvenient to use a liquid mouthwash or embarrassing to retain in the mouth chewing gum or a slowly soluble lozenge. The wafer form of mouthwash of this invention meets this desideratum.
- According to the present invention there is provided a wafer readily soluble in the mouth to form a refreshing and antiseptic mouthwash, said wafer comprising a dried, aqueous emulsion of a sweetener, a flavouring agent, a bactericide which is safe for internal use and a water-soluble stabilizer which is edible and physiologically innocuous.
- The expression "readily soluble in the mouth" as used in this specification should be understood as meaning soluble in the mouth within a short time of 1—2 minutes.
- According to an embodiment of the invention, a wafer as above described has a thickness of 2 to 50 thousandths of an inch (mils) lateral dimensions of $\frac{1}{4}$ inch to 1 inch, a foam-like texture and is comprised of a cyclamate, peppermint oil, benzoic acid or a benzoate, cetyl dimethylbenzyl ammonium chloride, methyl cellulose or propylene glycol alginate and 5 to 15 per cent by weight water.
- The wafers of this invention are light in weight, stable at ambient conditions, readily dispensable and quickly soluble in the mouth for immediate and lingering refreshment and breath sweetening. They may have, for example, weights of 0.005 to 0.1 gram. A typical and preferred wafer of the invention has a weight of approximately 0.025 grams, a thickness of about 25 thousandths of an inch and a $\frac{3}{4}$ inch square with rounded corners.
- The composition of the wafer of the invention may vary considerably, depending upon the relative emphases placed upon flavour, breath sweetening activity, caloric content, and stability. A preservative, food colour, contact effervescent, combination thereof, and other compatible materials may also be included in the composition of the wafer.
- For dietary reasons, the sweetener is preferably a noncaloric, artificial sweetener, such as a cyclamate, for example calcium cyclamate, sodium cyclamate, saccharin, or a combination of such compounds, the content of sweetener preferably being 0.5 to 30 per cent by weight. The flavouring agent may for example be peppermint oil, or any of the oils of anise, cloves, lemon, orange, cinnamon, menthol, or eucalyptus, the content of flavouring agent preferably being 5 to 50 per cent by weight. The preservative may be one or a combination of such well-known food preservatives as benzoic acid, a benzoate such as, for example sodium benzoate, methyl-p-hydroxybenzoate or propyl-p-hydroxybenzoate, sorbic acid a sorbate or a combination thereof, the preservative content preferably being 0.01 to 0.25 per cent by weight. Suitable bactericides include n-alkyl (C_{12} , C_{14} , C_{16}) dimethylbenzyl ammonium chlorides, such as cetyl dimethylbenzyl ammonium chloride, cetyl pyridinium chloride, hexyl resorcinol, and any other water soluble agents which are safe for internal use or a combination thereof, the bactericide content being preferably 0.02 to 0.04 per cent by weight. The stabilizer component may be any edible, physiologically innocuous and water soluble binder and emulsi-

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- 5 fier, or bodying agent, such as methyl cellulose, an alkali metal carboxymethylcellulose such as, sodium carboxymethyl cellulose, or an alginate such as propylene glycol alginate, or combination thereof, and preferably the stabilizer represents 10 to 85 per cent by weight of the wafer. Non-ionic stabilizers such as methyl cellulose are greatly preferred.
- 10 The present invention also comprehends a method of preparing the wafer as defined above, comprising adding the stabilizer to an aqueous solution of sweetener, flavouring agent, preservative and bactericide while stirring vigorously until the resulting emulsion attains a viscosity within the range of 700 to 1500 cps, measured at 20°C., casting the emulsion on a non-sticky surface, and drying it at 80 to 105°C. to a moisture content 5 to 15 percent by weight.
- 20 The sweetener, preservative, bactericide, flavouring agent and, if desired, food colour are added to water, preferably distilled water.
- This is stirred vigorously at ambient temperature while gradually adding the stabilizer component until the emulsion reaches a viscosity within the range of 700 to 1500 cps at 20°C. The stirring of the increasingly viscous emulsion is maintained at a high speed to entrain and entrap air, which is retained for the most part as the emulsion is subsequently cast on a non-sticky, preferably fluorocarbon-coated surface and then dried, e.g. in an oven or by infra-red radiation, at a temperature of 80 to 105°C in 30 to 45 minutes. The cast and dried emulsion, having a foam-like texture imparted to it by the entrapped air and a water content of 5 to 15 per cent by weight is then die-cut into wafer form, preferably 3/4 inch square with rounded corners, and packaged.
- Table 1 below illustrates the ranges of relative concentrations by weight of the components of typical aqueous emulsions prior to drying:

TABLE 1

Components	Per cent by Weight	
	From	To
Distilled water	65.0	95.0
Calcium cyclamate — 8% aq. solution	5.0	25.0
Calcium saccharin — 0.8% aq. solution	5.0	25.0
Cetyl dimethyl benzyl ammonium chloride — 0.4% aq. solution	2.5	5.0
Peppermint oil, U.S.P., redistilled	0.5	5.0
Methyl cellulose, U.S.P., 100 CPS	0.5	5.0
Propylene glycol alginate	0.5	5.0
Sodium carboxymethylcellulose	0.5	5.0
Benzoic acid — 0.1% aq. solution	5.0	25.0
Methyl-p-hydroxybenzoate — 0.05% aq. solution	5.0	25.0

Table 2 shows the ranges of relative concentrations by weight of the components of wafers typical of the invention after drying and when ready for use and packaging:

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TABLE 2

Components	Per cent by Weight	
	From	To
Distilled water	5.0	15.0
Calcium cyclamate	5.0	30.0
Calcium saccharin	0.5	5.0
Cetyl dimethyl benzyl ammonium chloride	0.02	0.04
Peppermint oil, U.S.P. redistilled	5.0	50.0
Methyl cellulose, U.S.P., 100 CPS	10.0	85.0
Propylene glycol alginate	10.0	45.0
Sodium carboxymethylcellulose	10.0	45.0
Benzoic acid	0.025	0.25
Methyl-p-hydroxybenzoate	0.01	0.1

A preferred composition is set forth in Table 3:

TABLE 3

Components	Per Cent by Weight	
	Before Drying	After Drying
Distilled water	74.5	10.08
Calcium cyclamate	15.0*	17.70
Cetyl dimethyl benzyl ammonium chloride	5.0**	0.026
Peppermint oil, U.S.P., redistilled	2.0	26.20
Food Colour	as desired	
Methyl cellulose, U.S.P., 100 CPS	3.5	46.00

*An 8% aqueous solution also containing calcium saccharin, in a cyclamate to saccharin ratio of 10:1 by weight.

**A 0.04% aqueous solution.

Another example of an emulsion composition suitable for casting, drying and die-cutting into wafers within the scope of this invention, in terms of percent by weight, is: 5

Distilled water	79.0%
Calcium cyclamate (8% aq. solution)	12.0%
Cetyl dimethyl benzyl ammonium chloride (400 p.p.m. aq. solution)	5.0%
Peppermint oil, U.S.P., redistilled	1.5%
Methyl cellulose, U.S.P., 100 CPS	1.25%
Propylene glycol alginate	1.25%

The wafers of the invention are translucent to opaque, flexible, stable to storage, and dissolve in the mouth within a few seconds, leaving a clean and fresh aftertaste by reason of the content of the flavouring agent and suppressing undesirable mouth odours due to the activity of the bacteriostatic or bactericidal agent or agents. The dissolution in the mouth is complete, no residue being left to create a problem of disposal, and contact of the wafer with the tongue imparts no desensitization. They can be packaged in flat, easily carried dispensers, thus obviating the alternative of carrying liquids in bulky, and possibly leaky bottles.

WHAT WE CLAIM IS:—

1. A wafer readily soluble in the mouth to form a refreshing and antiseptic mouth-wash, said wafer comprising a dried, aqueous emulsion of a sweetener, a flavouring agent, a bactericide which is safe for internal use and a water-soluble stabilizer which is edible and physiologically innocuous.

2. A wafer as claimed in claim 1, wherein the water-content is 5 to 15 per cent by weight.

3. A wafer as claimed in claim 1 or 2, wherein the sweetener is sodium or calcium cyclamate, saccharin or a combination thereof, and the content of sweetener is 0.5 to 30 per cent by weight.

4. A wafer as claimed in claim 1, 2 or 3, wherein the flavouring agent is an oil of peppermint, anise, cloves, lemon, orange, cinnamon, menthol or eucalyptus, and the content thereof is 5 to 50 per cent by weight.

5. A wafer as claimed in claim 1, 2, 3, or 4, containing benzoic acid, a benzoate, sorbic acid, a sorbate, or a combination thereof as preservative, the content of the preservative being 0.01 to 0.25 per cent by weight.

6. A wafer as claimed in any one of the

preceding claims, wherein the bactericide is an n-alkyl (C_{12} , C_{14} , C_{16}) dimethylbenzyl ammonium chloride, cetyl pyridinium chloride, hexyl resorcinol, or a combination thereof, and the content of bactericide is 0.02 to 0.04 per cent by weight.

7. A wafer as claimed in any one of the preceding claims, wherein the stabilizer is methyl cellulose, an alkali metal carboxymethyl cellulose, an alginate, or a combination thereof, and the content of stabilizer is 10 to 85 per cent by weight.

8. A wafer as claimed in claim 7, wherein the stabilizer is non-ionic.

9. A wafer as claimed in claim 1 having a thickness of 2 to 50 mils, lateral dimensions of 1/4 inch to one inch, a foam-like texture, and composed of a cyclamate, peppermint oil, benzoic acid or a benzoate, cetyl dimethylbenzyl ammonium chloride, methyl cellulose or propylene glycol alginate and 5 to 15 per cent by weight water.

10. A wafer according to Claim 1, substantially as hereinbefore described.

11. A method of preparing the wafer according to Claim 1, which comprises adding the stabilizer to an aqueous solution of sweetener, flavouring agent, preservative and bactericide while stirring vigorously until the resulting emulsion attains a viscosity within the range of 700 to 1500 cps, measured at 20°C., casting the emulsion on a non-sticky surface; and drying it at 80 to 105°C. to a moisture content of 5 to 15 percent by weight.

12. A method of making the wafer according to Claim 1, substantially as hereinbefore described.

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